

What is Claimed is:

1           1. A method of processing a query in a database management system, the method  
2 comprising:

3           (a) generating a preferred access path for a query at execution time based upon a first  
4 value for each variable in the query;

5           (b) storing information related to said query, said first value for each variable and said  
6 preferred access path; and

7           (c) determining whether to regenerate said preferred access path for use with subsequent  
8 execution of the same query using a second value for each variable based upon a comparison of  
9 the stored information related to said first value for each variable with information related to said  
10 second value for each variable; and

11          (d) regenerating said preferred access path in accordance with said determination.

1           2. The method of claim 1, wherein step (a) further includes:

2           (a.1) generating a preferred access path for said query based further upon a frequency  
3 distribution of said first value for each variable in said query.

1           3. The method of claim 1, wherein step (b) further includes:

2           (b.1) generating a unique identifier unambiguously denoting the query.

1           4. The method of claim 1, wherein step (b) further includes:

2           (b.1) storing said first value for each variable independently.

1           5. The method of claim 1, wherein step (b) further includes:

2           (b.1) determining a frequency distribution of said first value for each variable.

1           6. The method of claim 1, wherein step (b) further includes:

2 (b.1) determining a unique indicator unambiguously denoting a category of values that  
3 cause the generation of the same access path.

1 7. The method of claim 6, wherein step (b.1) further includes:

2 (b.1.1) choosing a category, wherein said category is at least one of:

3 a category of values causing a table-space scan access path,

4 a category of values causing an index-scan access path,

5 a category of values causing an index-access access path, and

6 a category corresponding to a cardinality range of said first value.

1 8. The method of claim 7, wherein step (c) includes:

2 (c.1) categorizing said second value for each variable.

1 9. The method of claim 8, wherein step (c) includes:

2 (c.2) determining whether said first value and said second value belong to a different  
3 category.

1 10. The method of claim 1, wherein step (d) includes:

2 (d.1) storing the regenerated preferred access path and corresponding second values for  
3 each variable and frequency distribution.

1           11. A program product apparatus having a computer readable medium with computer  
2 program logic recorded thereon for processing a query in a data management system, said  
3 program product apparatus comprising:

4           an optimizer module for generating a preferred access path for a query at execution time  
5 based upon a first value for each variable in the query;

6           a storage module for storing information related to said query, said first value for each  
7 variable and said preferred access path; and

8           a functional module for determining whether to regenerate said preferred access path for  
9 use with subsequent execution of the same query using a second value for each variable based  
10 upon a comparison of the stored information related to said first value for each variable with  
11 information related to said second value for each variable and for regenerating said preferred  
12 access path in accordance with said determination.

1           12. The program product of claim 11, wherein the optimizer module generates a preferred  
2 access path for said query based further upon a frequency distribution of said first value for each  
3 variable in said query.

1           13. The program product of claim 11, wherein the storage module further generates a  
2 unique identifier unambiguously denoting the query.

1           14. The program product of claim 11, wherein the storage module stores said first value  
2 for each variable independently.

1           15. The program product of claim 11, wherein the storage module determines a frequency  
2 distribution of said first value for each variable.

1           16. The program product of claim 11, wherein the storage module determines a unique  
2 indicator unambiguously denoting a category of values that cause the generation of the same  
3 access path.

1           17. The program product of claim 16, wherein the storage module further chooses a  
2 category, wherein said category is at least one of:  
3           a category of values causing a table-space scan access path,  
4           a category of values causing an index-scan access path,  
5           a category of values causing an index-access access path, and  
6           a category corresponding to a cardinality range of said first value.

1           18. The program product of claim 17, wherein the functional module categorizes said  
2 second value for each variable.

1           19. The program product of claim 18, wherein the functional module determines whether  
2 said first value and said second value belong to a different category.

1           20. The program product of claim 11, wherein the functional module stores the  
2 regenerated preferred access path and corresponding second values for each variable and  
3 frequency distributions in response to said preferred access path regeneration.

1           21. A system for the storage and retrieval of data comprising:  
2           an optimizer for generating a preferred access path for a query at execution time based  
3 upon a first value for each variable in the query,  
4           a storage unit for storing information related to said query, said first value for each  
5 variable and said preferred access path; and  
6           a functional unit for determining whether to regenerate said preferred access path for use  
7 with subsequent execution of the same query using a second value for each variable based upon a

8 comparison of the stored information related to said first value for each variable with information  
9 related to said second value for each variable and for regenerating said preferred access path in  
10 accordance with said determination.

1 22. The system of claim 21, wherein the optimizer generates a preferred access path for  
2 said query based further upon a frequency distribution of said first value for each variable in said  
3 query.

1 23. The system of claim 21, wherein the storage unit further generates a unique identifier  
2 unambiguously denoting the query.

1 24. The system of claim 21, wherein the storage unit stores said first value for each  
2 variable independently.

1 25. The system of claim 21, wherein the storage unit determines a frequency distribution  
2 of said first value for each variable.

1 26. The system of claim 21, wherein the storage unit determines a unique indicator  
2 unambiguously denoting a category of values that cause the generation of the same access path.

1 27. The system of claim 26, wherein the storage unit further chooses a category wherein  
2 said category is at least one of:  
3 a category of values causing a table-space scan access path,  
4 a category of values causing an index-scan access path,  
5 a category of values causing an index-access access path, and  
6 a category corresponding to a cardinality range of said first value.

1           28. The system of claim 27, wherein the functional unit categorizes said second value for  
2 each variable.

1           29. The system of claim 28, wherein the functional unit determines whether said first  
2 value and said second value belong to a different category.

1           30. The system of claim 21, wherein the functional unit stores the regenerated preferred  
2 access path and corresponding second values for each variable and frequency distributions in  
3 response to said preferred access path regeneration.